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IHSA-82-029

6 July 1982

MEMORANDUM FOR: Bruce T. Johnson
Director of Data Processing

FROM:
Information Handling Systems Architect

SUBJECT: Strategic Planning Concerns

REFERENCE: Memorandum for IHSA from D/ODP dated
24 June 1982, Subject: Background
Information for IHSA Strategic Plan

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1. While the background information of the reference memorandum was helpful in providing insight into the thinking within the ODP, it lacked the strategic planning specifics of concern. This office has been tasked to provide a strategic plan that is specific with respect to what is going to be provided, when, by whom, and for how much. We have been specifically admonished not to provide a plan for a plan. We also need to succinctly justify or present the rationale for these investments. We are presenting the cases for the long-term commitment of the government to major IHS investments, and senior Agency and Administration managers need to understand the necessity for those investments.

Your assistance is needed in assuring that those in ODP making contributions to the strategic planning effort understand these requirements. The material we have received has been much stronger in the budgetary and general approach, than in what and when specifics. I would hope that our people could work these problems through on an informal basis, with appropriate guidance.

In response to your memo, it also seems appropriate to identify and classify the few major concerns or disagreements that this Staff has with your expressed positions. This is done in the following paragraphs.

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2. Bus/Twisted Pair

Time appears to be rapidly running out on twisted pair as the sole communications media for terminals. We are now about to begin to install local area nets, such as Category IV Wang Systems, and distributed processing systems, such as the Xerox Dolphin. This will require bandwidths that substantially exceed the capabilities of twisted pair. In addition, there is the installation problem. Considering the constant movement of terminals, it looks like the terminal installation rate will shortly be on the order of 2000 per year. This substantially exceeds our best current installation rate, and presages continuation of all of the current delays and costs involved in providing terminal access to users, if we are still dependent on twisted pair at that time.

Based on current funding schedules, it would seem that a commitment to the new building terminal communications media will have to be made in '83 with installation beginning in '85. If we continue the current twisted pair by default, then major additional expenses are incurred for conversion almost directly after completion of the building. In addition, the bandwidth demand in both old and new buildings we project to require bus, or similar technology, by 1985. We believe that the Agency needs to maintain the SAFE program commitment to bus and forge ahead full speed with that technology, if not with the SAFE bus itself. Twisted pair will have to be relied upon in the interim, but this should not detract from scheduling an early bus type system availability to meet our clearly foreseeable needs.

3. Commercial DBMS

This staff office believes a continual reliance upon GIM as the Agency DBMS for all new systems through 1985 would be a serious mistake. We need to build our new Administrative systems using a commercial DBMS so that we can capitalize on development time and cost economies available through broader qualified vendor support, and escape the life cycle maintenance dependence associated with the unique GIM system.

SAFE is essentially committed to application of a commercial DBMS, with CCA's Model 204 a most prominently mentioned candidate. Systems such as these are designed to handle applications like our Administration systems. As soon as the SAFE DBMS decision is made, which should be within a few months, we should acquire and install that DBMS for general use. We should plan on putting our new Administration systems on that commercial DBMS, as well as making it generally available to designers and users.

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Administrative - Internal Use Only**4. Processing Center Architecture**

While the exact interaction of the various factors which will drive the architecture of our processing centers is hard to see from this time, it certainly seems likely that change is going to be needed. Continuation of the current architecture seems to imply a complexity in systems software that is of dubious practicality within our planning timeframe. Some of the factors that we see impinging on the architecture design are:

- o Connectivity to the users.
- o Provision of a single or very limited set of user interface environments.
- o Greatly expanded on-line storage facilities.
- o Incorporation of specialized machinery, e.g. array processors, data base machines, and specialized graphics display drivers.
- o Large file transfer between cluster centers.
- o Ultra-high availability.

Requirements such as these have led to layered architectures, such as those now operating at NSA, Rand, Chemical Abstracts Services and AT&T. SAFE, of course, evolved as a layered architecture for basically the same set of reasons. It would seem likely that one might be led to a similar solution for our current centers in order to achieve a practical level of simplicity in assembling the functionalities required.

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July 6*

29 June 1982

TO: IHSA Staff

FROM:

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The way I read this, in an affirmative and carefully worded formal response to our strategic planning requests, ODP has said that they are:

- . Not going to do any SP WRT distributed DB's and the OSs required to deal with them.
- . Not going to plan on bus comm with users, or agree to anybody else's decision to plan on bus.
- . Not going to set specific availability goals.
- . Not going to respond to the security issue of mixed development and operational environments.
- . Not going to provide a commercial DBMS to support the new Admin systems, thereby committing them to GIM.
- . Not going to specify what improved IRM techniques are going to be applied.
- . Not going to provide any SPs WRT facilities layout in the new building, e.g., commitment to separate cluster centers.
- . Not going to explain why we need to spend \$50M on new Admin systems.
- . Not going to develop an SP for terminals.
- . Not going to support the SP for special S&T facilities.

Have I misunderstood? Any Comments?

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